Prince George Forest Region

Forest Resources & Practices Team

February, 2000
Note #PG-21

FOREST EXTENSION NOTE

Brushing Trends in the Prince George Forest Region from 1988 to 1998

by Susan Hoyles

Background

The purpose of this extension note is to provide a summary of hectares brushed on SBFEP and backlog sites, by the ministry in the Prince George Forest Region from 1988 to 1998. The data has been gathered from the Ministry of Forests Integrated Silviculture Information System (ISIS).

Various government funding levels and programs have influenced the amount of brushing accomplished, and the methods used, over the years. This is demonstrated in the regional summary for both manual (Figure 2) and chemical (Figure 3) brushing activities. From 1985 to 1991 FRDA I, a joint Canada — British Columbia funding program, entitled Forest Resource Development Agreement, provided funds to assist in the reduction of backlog. These funds were used to rehabilitate NSR areas and bring them back into a productive forest. All methods of brushing activities increased significantly during this time frame. Chemical methods had the biggest increases.

In 1992 to 1993, Ministry of Forests SBFEP funds were used to achieve brushing goals with similar trends of activity continuing.

In 1994, Forest Renewal BC (FRBC) funds became available for brushing on backlog sites. One of the objectives of these funds was to provide employment to the forestry sector. Brushing methods that provided jobs were strongly encouraged and manual methods increased significantly. In 1994 and 1995, the Ministry of Forests administered these funds. Starting in 1996, and facing significantly reduced dollars, the administration of these funds changed to be jointly administered by Ministry of Forests, forest licensees and FRBC. The amount of brushing carried out by the ministry was declining significantly during this time period. By 1998, FRBC funds had completely replaced SBFEP funds, with most of the dollars now being spent by the licensees. Any ministry brushing activities would come from these FRBC funds.

The following graphs and tables present brushing information for the Prince George Forest Region and each of the eight forest districts. The data is presented in the following formats: summary of all brushing methods (Figure 1), summary of chemical brushing techniques (Figure 2), and a summary of manual brushing techniques (Figure 3).

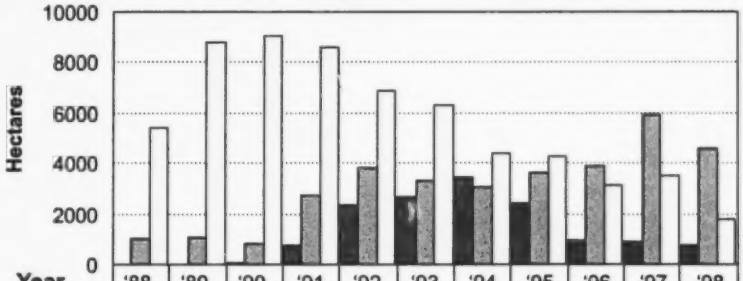
Girdling treatment in the Mackenzie Forest District.

Total Brushing

The following graphs summarize total hectares brushed for the Prince George Forest Region, and for each of the forest districts.

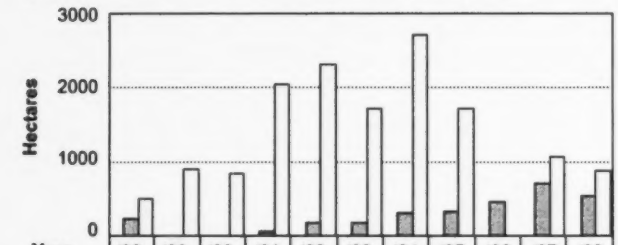
It is interesting to note a couple of brushing trends over the years. Sheep grazing as a vegetation management tool reached its peak during the early-to-mid 90s. The availability of suitable sites and the lack of financial resources have contributed to its declining use by the ministry in recent years. From 1988 to 1998, manual brushing has increased by approximately 80% and, from its height in 1990, chemical brushing has decreased by approximately 80%. The decline in chemical use has been influenced by many factors. These include a reduction in areas that need treatment, social pressures, and a more pro-active approach to vegetation management problems.

Figure 1a. Prince George Region – Total Brushing 1988-1998



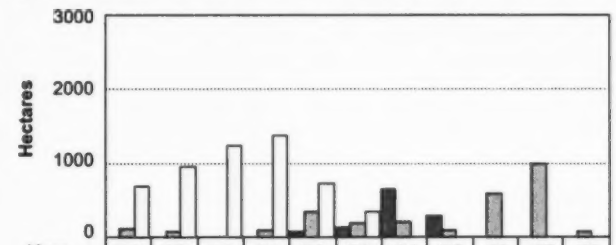
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
Grazing	0	0	71	768	2331	2649	3426	2430	977	860	746
Manual	1040	1111	818	2718	3831	3297	3035	3626	3869	5943	4599
Chemical	5441	8804	9074	8607	6907	6303	4380	4267	3103	3528	1762
Total ha's	6481	9915	9963	12093	13069	12249	10841	10323	7949	10331	7017

Figure 1b. Fort Nelson District – Total Brushing 1988-1998



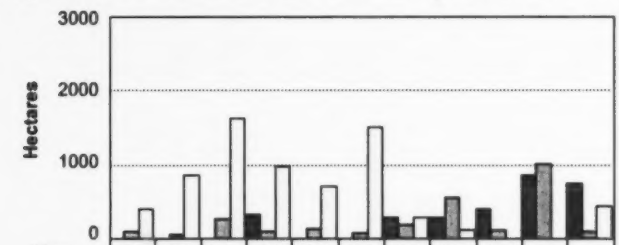
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
Grazing	0	0	0	0	0	0	0	0	0	0	0
Manual	223	0	0	64	177	178	312	323	459	710	532
Chemical	496	896	835	2054	2310	1717	2715	1712	0	1070	873

Figure 1c. Fort St. John District – Total Brushing 1988-1998



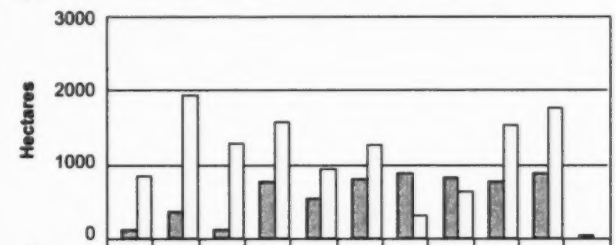
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
Grazing	0	0	0	0	80	130	653	296	0	0	0
Manual	114	85	5	88	336	191	215	100	589	987	81
Chemical	689	952	1246	1370	724	347	0	0	0	0	0

Figure 1d. Dawson Creek District – Total Brushing 1988-1998



Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
Grazing	0	0	0	333	0	0	280	280	393	860	746
Manual	102	54	263	100	126	73	198	550	110	1011	93
Chemical	392	865	1622	981	716	1514	293	114	0	0	438

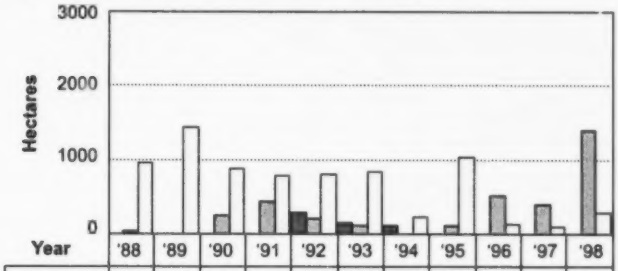
Figure 1e. Mackenzie District – Total Brushing 1988-1998



Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
Grazing	0	0	0	0	0	0	0	0	0	0	0
Manual	123	355	121	760	536	811	888	824	769	888	41
Chemical	832	1928	1273	1565	944	1252	298	628	1522	1764	0

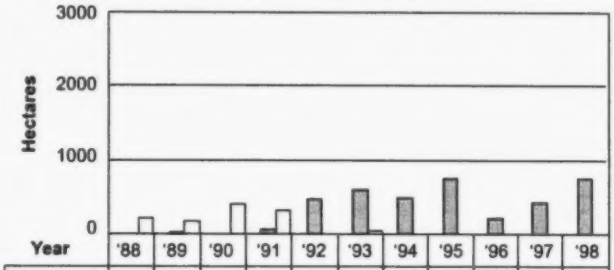
Ministry of Forests, 5th Floor, 1011 - 4th Avenue, Prince George, BC V2L 3H9 Telephone: (250) 565-6100 Fax: (250) 565-4349

Figure 1f. Fort St. James District – Total Brushing 1988-1998



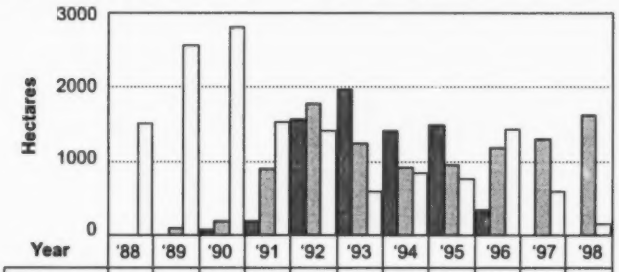
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
Grazing	0	0	0	0	280	158	109	0	0	0	0
Manual	44	0	240	435	210	124	0	112	522	407	1400
Chemical	958	1436	880	785	808	836	226	1041	142	99	290

Figure 1g. Vanderhoof District – Total Brushing 1988-1998



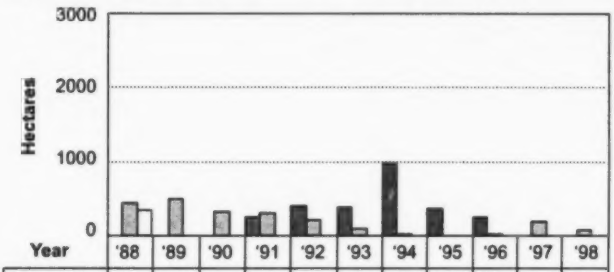
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
Grazing	0	0	0	0	0	0	0	0	0	0	0
Manual	0	25	0	66	465	599	495	754	210	439	759
Chemical	217	166	404	321	0	36	0	0	0	7	0

Figure 1h. Prince George District – Total Brushing 1988-1998

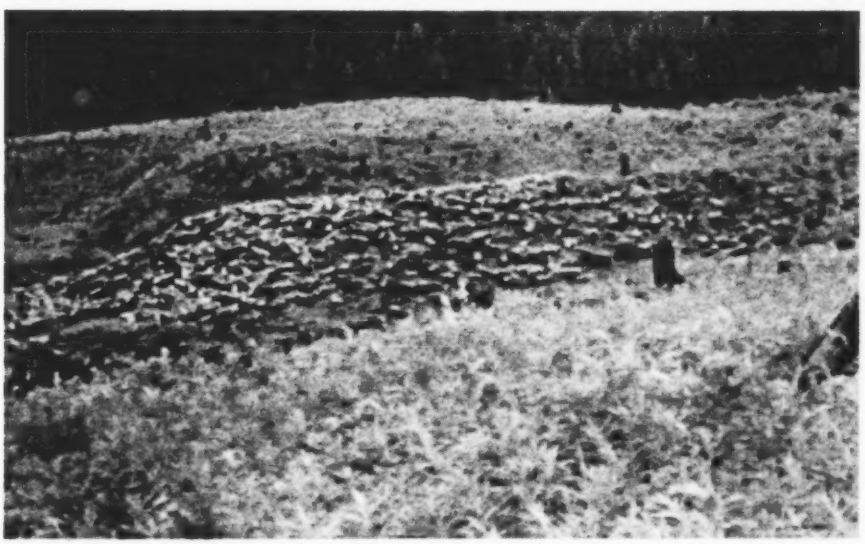


Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
Grazing	0	0	71	183	1572	1975	1405	1499	340	0	0
Manual	0	94	189	890	1768	1234	914	961	1184	1303	1626
Chemical	1513	2561	2814	1531	1405	601	848	772	1439	588	161

Figure 1i. Robson Valley District – Total Brushing 1988-1998



Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
Grazing	0	0	0	252	399	386	979	355	244	0	0
Manual	434	498	323	315	213	87	13	2	26	198	67
Chemical	344	0	0	0	0	0	0	0	0	0	0



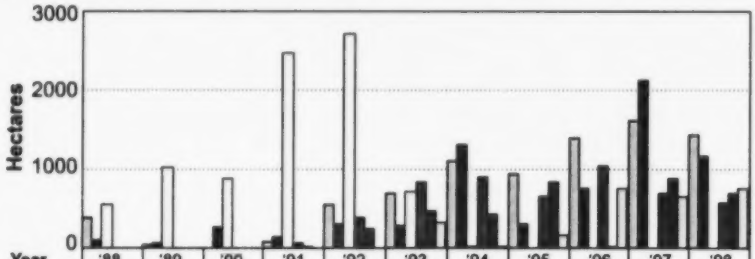
Sheep grazing on a site in the Prince George District.

Ministry of Forests, 5th Floor, 1011 - 4th Avenue, Prince George, BC V2L 3H9 Telephone: (250) 565-6100 Fax: (250) 565-4349

Manual Brushing

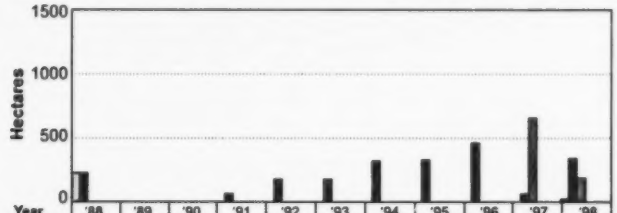
The following graphs summarize manual brushing for the Prince George Forest Region and for the forest districts. The graphs show the different types of manual techniques that have been used from 1988 to 1998. As mentioned earlier, manual treatments have increased by 80% since 1988. FRBC funding has influenced the upward trend of manual treatments.

Figure 2a. Total Prince George Region – Manual Brushing 1988-1998



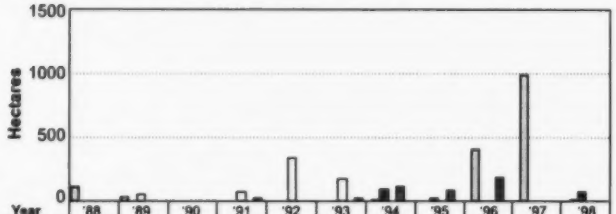
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
POWER	391	34	0	77	545	687	1106	933	1386	1610	1421
BRUSH	102	54	263	150	301	283	1297	312	765	2122	1157
HANDR	547	1023	878	2473	2712	711	11	5	0	0	0
MANCT	0	0	0	64	386	844	902	653	1048	695	566
MANGI	0	0	0	18	245	463	419	841	28	872	701
MAN	0	0	0	0	0	320	27	158	747	647	755
Total ha's	1040	1111	1141	2782	4189	3308	3762	2902	3974	5946	4600

Figure 2b. Fort Nelson District – Manual Brushing 1988-1998



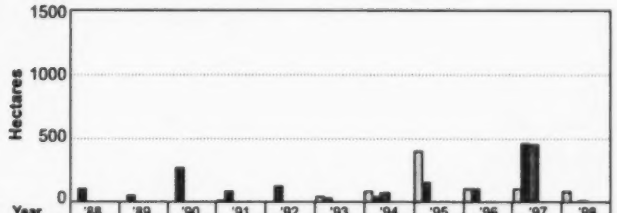
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
POWER	223	0	0	0	0	0	0	0	0	0	17
BRUSH	223	0	0	64	177	178	312	323	458	62	335
MANCT	0	0	0	0	0	0	0	0	0	649	180

Figure 2c. Fort St. John District – Manual Brushing 1988-1998



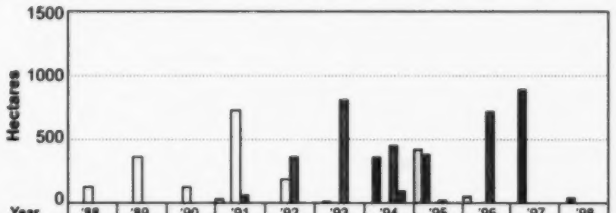
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
POWER	114	34	0	0	0	0	11	0	410	989	12
BRUSH	0	0	0	0	0	0	91	22	0	0	69
HANDR	0	51	5	70	336	174	0	8	0	0	0
MANCT	0	0	0	0	0	0	113	78	183	0	0
MANGI	0	0	0	18	0	17	0	0	0	0	0

Figure 2d. Dawson Creek District – Manual Brushing 1988-1998



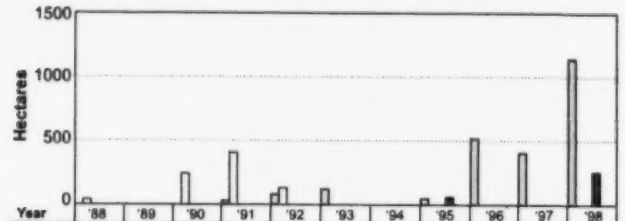
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
POWER	0	0	0	14	2	41	80	385	108	107	88
BRUSH	102	54	263	86	124	32	45	155	104	456	0
MANGI	0	0	0	0	0	0	73	0	0	448	6

Figure 2e. Mackenzie District – Manual Brushing 1988-1998



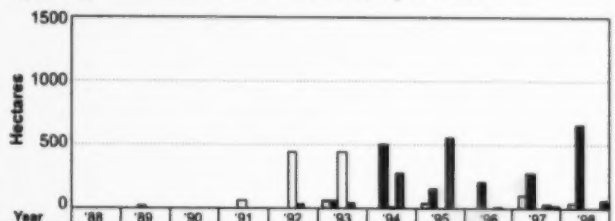
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
POWER	0	0	0	32	0	0	0	421	54	0	0
BRUSH	0	0	0	0	0	7	354	379	0	888	39
HANDR	123	355	121	728	179	0	0	0	0	0	0
MANCT	0	0	0	64	357	804	444	23	715	0	3
MANGI	0	0	0	0	0	0	90	0	0	0	0

Figure 2f. Fort St. James District – Manual Brushing 1988-1998



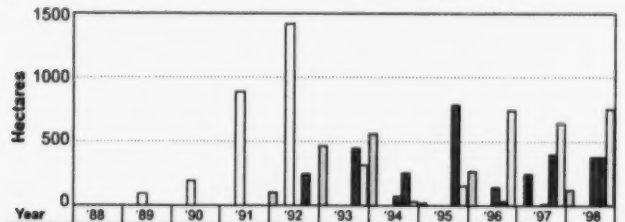
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
POWER	0	0	0	31	80	124	0	52	522	407	1142
HANDR	44	0	240	404	130	0	0	0	0	0	0
MANCT	0	0	0	0	0	0	0	0	0	0	5
MANGI	0	0	0	0	0	0	0	60	0	0	253

Figure 2g. Vanderhoof District – Manual Brushing 1988-1998



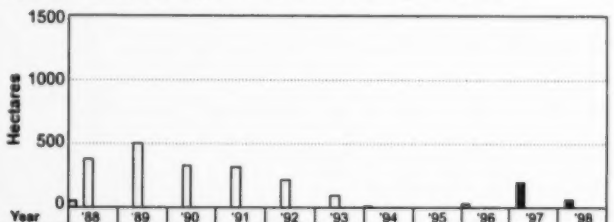
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
POWER	0	0	0	0	0	57	0	43	0	107	45
BRUSH	0	0	0	0	0	96	495	157	202	273	650
HANDR	0	25	0	86	437	439	11	5	0	0	0
MANCT	0	0	0	0	29	37	272	550	8	34	0
MANGI	0	0	0	0	0	0	0	0	0	25	84

Figure 2h. Prince George District – Manual Brushing 1988-1998



Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
POWER	0	0	0	0	106	465	558	22	268	0	119
BRUSH	0	0	0	0	0	0	0	0	0	245	0
HANDR	0	94	189	890	1417	0	0	0	0	0	0
MANCT	0	0	0	0	0	3	73	0	142	12	375
MANGI	0	0	0	0	245	446	256	781	28	399	378
MAN	0	0	0	0	0	320	27	158	747	647	755

Figure 2i. Robson Valley District – Manual Brushing 1988-1998



Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
POWER	54	0	0	0	0	0	13	0	26	0	0
BRUSH	0	0	0	0	0	0	0	0	0	198	64
HANDR	380	498	323	315	213	87	0	0	0	0	0
MANCT	0	0	0	0	0	0	0	2	0	0	3

LEGEND

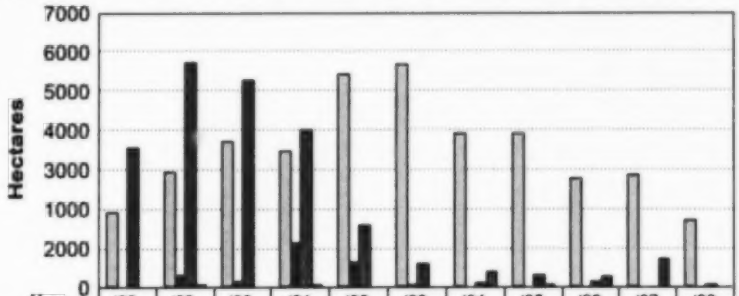
POWER — power saw
BRUSH — brush saw
MANCT — manual cutting
MANGI — manual girdling
HANDR — hand pulling (removal)

Ministry of Forests, 5th Floor, 1011 - 4th Avenue, Prince George, BC V2L 3H9 Telephone: (250) 565-6100 Fax: (250) 565-4349

Chemical Brushing

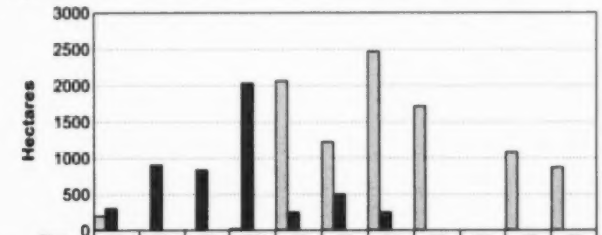
The following graphs summarize chemical brushing for the Prince George Forest Region and for each of the forest districts. The graphs show the different types of chemical techniques that have been used from 1988 to 1998. It is interesting to note that the amount of chemical back-pack treatments have significantly decreased from the late 80s. As mentioned earlier, total chemical treatments have declined by 80% throughout the region. Some districts have gone through periods of time where they have not used herbicides for brushing treatments. Factors include First Nations and community environmental concerns, need, and weather related constraints.

Figure 3a. Total Prince George Region - Chemical Brushing 1988-1998



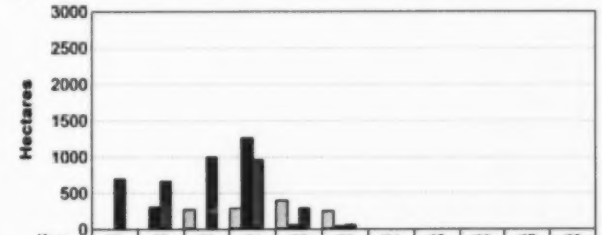
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
CA Heli	1882	2912	3702	3478	5416	5664	3916	3930	2764	2823	1702
CA Fixed	0	301	113	1097	601	42	0	0	0	0	0
CG BPack	3559	5733	5259	3974	1550	597	85	289	110	0	60
CG Other	0	24	0	58	0	0	360	58	230	705	0
Total ha's	5441	8970	9074	8607	7567	6303	4361	4277	3104	3528	1762

Figure 3b. Fort Nelson District - Chemical Brushing 1988-1998



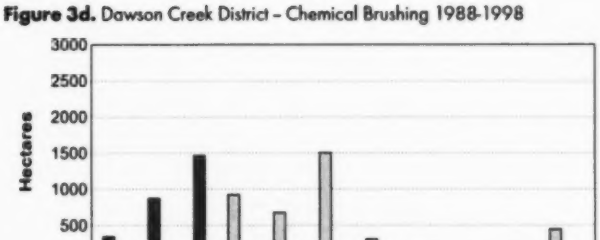
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
CA Heli	192	8	0	20	2061	1217	2468	1709	0	1070	873
CG Bpack	304	896	835	2034	249	500	247	4	0	0	0

Figure 3c. Fort St. John District - Chemical Brushing 1988-1998



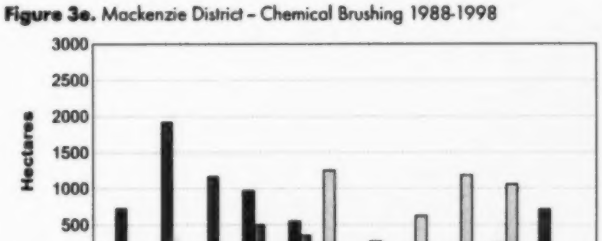
Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
CA Heli	0	0	259	287	387	256	0	0	0	0	0
CA Fixed	0	301	0	1260	61	42	0	0	0	0	0
CG Bpack	689	651	987	957	276	50	0	0	0	0	0

Figure 3d. Dawson Creek District - Chemical Brushing 1988-1998



Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
CA Heli	60	0	166	923	672	1496	293	87	0	0	438
CG Bpack	332	865	1456	0	0	18	0	27	0	0	0
CG Other	0	0	0	58	0	0	0	0	0	0	0

Figure 3e. Mackenzie District - Chemical Brushing 1988-1998



Year	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98
CA Heli	117	0	0	96	55	1252	259	617	1183	1059	0
CA Fixed	0	0	113	971	540	0	0	0	0	0	0
CG BPack	715	1928	1160	498	349	0	0	0	110	0	0
CG Other	0	0	0	0	0	0	39	12	230	705	0

Figure 3f. Fort St. James District - Chemical Brushing 1988-1998

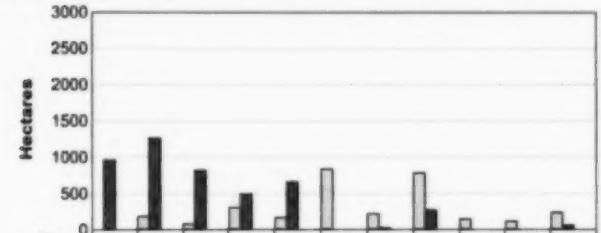


Figure 3g. Vanderhoof District - Chemical Brushing 1988-1998

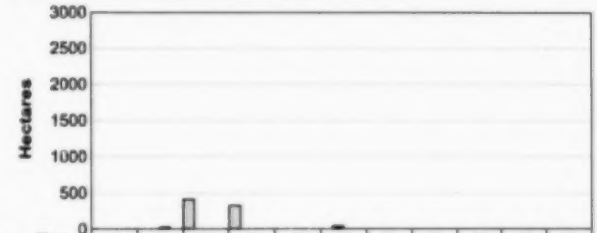


Figure 3h. Prince George District - Chemical Brushing 1988-1998

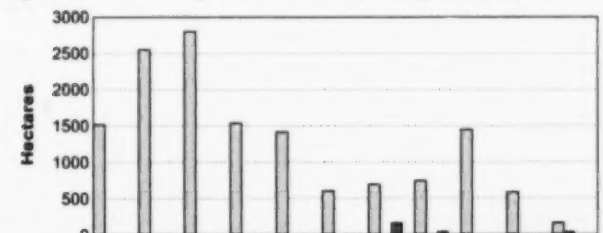
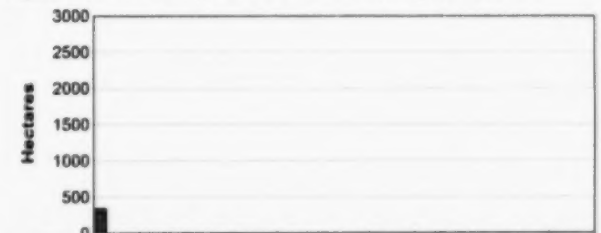


Figure 3i. Robson Valley District - Chemical Brushing 1988-1998



LEGEND

CA — chemical air
CG — chemical ground
HELI — helicopter
FIXED — fixed wing
BPACK — back-pack
OTHER - STUMP — stump treatment
SINJE — stem injection
FRILL — notch-frill individual tree
BASL — basal spray

Cutblock in Fort Nelson District, eight years after chemical backpack treatment with Vision (glyphosate).

For further information

Susan Hoyles, Silviculture Vegetation Officer, Ministry of Forests
5th Floor, 1011 - 4th Avenue, Prince George, BC V2L 3H9
Telephone: (250) 565-6100 Fax: (250) 565-4349
e-mail: Susan.Hoyles@gems7.gov.bc.ca